

What is claimed is:

1. A device for finishing a workpiece, such as a wheel, said finishing device comprising:

a bowl assembly including a bowl for storing abrasive polishing media therein;

a turret disposed adjacent said bowl and defining an axis of rotation, said turret having secured thereto at least one arm for supporting a wheel thereon and positioning the wheel in contact with the polishing media; and

a drive for rotating the turret and the wheel carried thereon to cause the wheel to travel along an orbital path about the axis of rotation through the polishing media within the bowl to polish at least a front face of the wheel, said drive including a cam arrangement which varies the angle of the wheel relative to a tangent of the orbital path at least once per revolution of the wheel about the axis.

2. The device of Claim 1 wherein said bowl assembly includes a generally upright support which is cantilevered upwardly from said bowl and supports thereon said drive and said turret vertically above said bowl.

3. The device of Claim 1 wherein said cam arrangement includes a cam plate defining an eccentric track adjacent said turret, and said arm mounting thereon a follower which engages within said track to oscillate the wheel about a vertical axis during its orbit about the axis of rotation.

4. The device of Claim 3 wherein the axis of rotation is vertically oriented, said bowl assembly includes an upright support structure which supports

thereon said drive assembly and said turret, said device including a plurality of said arms which are cantilevered downwardly from a lower side of said turret for positioning within the bowl, and said cam plate is mounted in a fixed manner adjacent a lower side of said turret.

5. A finishing device comprising:

a media storage and support assembly having a lower end for positioning on a support surface such as a floor, a tank for storing therein polishing media, and a support element connected to said tank and projecting upwardly from a generally central region thereof;

a rotatable turret positioned above said tank and carried on said support element, said turret including at least one mounting assembly which projects generally downwardly from said turret and supports a workpiece thereon for contact with the polishing media; and

a drive assembly carried on said support element in driving engagement with said turret to rotate same about a generally vertically oriented axis and cause the workpiece mounted on said turret to travel in an orbit about the axis.

6. The device of Claim 5 wherein said turret is supported on said drive assembly for rotation about said support element relative to said tank.

7. The device of Claim 5 wherein said drive assembly includes a sleeve disposed in surrounding relation with said support element, said sleeve mounting thereon a motor which is drivingly connected to said turret by a gear arrangement to rotatably drive said turret about the axis of rotation.

8. The device of Claim 7 wherein said turret is supported on said sleeve by a bearing which permits rotation of said turret relative to said sleeve.

9. The device of Claim 8 wherein said bearing includes an inner annular portion which is fixed to said sleeve and an outer ring gear which is rotatable relative to said inner portion and forms part of said gear arrangement, said turret being fixed to said ring gear for rotation therewith, said gear arrangement further including a spur gear associated with and driven by said motor, said spur gear being drivingly engaged with said ring gear for driving said turret.

10. The device of Claim 5 wherein said drive assembly is a first drive assembly, and said device includes a second drive assembly in driving engagement with said turret to vertically raise or lower said turret and said mounting assembly relative to said tank.

11. A finishing device comprising:

- a bowl assembly for positioning on a horizontal support surface such as a floor and including an upwardly opening bowl for storing finishing media therein;

- a rotatable carrier plate defining a vertical axis of rotation and supported in vertically upwardly spaced relation from said bowl, said carrier plate including at least one workpiece mounting arrangement projecting downwardly therefrom for positioning the workpiece within the media;

- a drive assembly drivingly connected to said carrier plate to rotate same about the vertical axis to cause the workpiece to travel through the finishing media in an orbit defined about the vertical axis; and

a hub arrangement disposed generally centrally within an interior of said bowl, said arrangement including at least one deflector element which projects into the interior of said bowl and towards the workpiece to compress the media against the workpiece and prevent build-up of media adjacent the center of the bowl.

12. The finishing device of Claim 11 wherein said deflector element is swingably movable towards and away from the workpiece.

13. The finishing device of Claim 12 wherein said hub arrangement includes a generally cylindrical wall which mounts thereon a plurality of said deflector elements circumferentially about said wall, each said deflector element being mounted for pivoting movement about a vertical pivot axis relative to said wall and being pivotable into a plurality of positions relative to the workpiece.

14. The finishing device of Claim 11 wherein said deflector is mounted for pivoting movement about a vertical axis to permit adjustment of the position of said deflector radially towards and away from the workpiece.

15. The finishing device of Claim 11 further including an elongate and vertically oriented support which projects upwardly from a central region of said bowl and supports said drive assembly and said turret thereon, said hub arrangement being disposed adjacent a lower end of said support within an interior of said bowl.

16. A process for finishing a workpiece, said process comprising the steps of:

providing a finishing device including a tank containing finishing media therein, a turret carrying thereon at least one workpiece such that same projects into the tank and is pivotable about a vertical axis, and a drive associated with the turret for rotating same relative to the tank to cause the workpiece to travel along an orbital path within the tank;

positioning the workpiece in contact with the finishing media within the tank;

moving the workpiece along the orbital path and through the finishing media; and

oscillating the workpiece about the vertical axis at least once per revolution of the wheel along the orbital path.

17. The process of Claim 16 further including vertically oscillating the workpiece relative to the finishing media.